Paper No. 59

UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

Ex parte JOHN H. ALLEN

_____

Appeal No. 2002-2090
Application 08/430,311

_____

ON BRIEF

_____

Before FRANKFORT, PATE, and STAAB, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 57 through 63, 65, 66 and 69 through 79. Claims 67 and 68, the only other claims remaining in the application, stand allowed. Claims 1 through 56 and 64 have been canceled.

Appellant's invention relates to load bearing concrete panel structures for use as decking material such as in structural floors and bridge decks, and to the method of producing such panel structures. As noted on pages 14-15 of the specification, a principal object of the invention is to provide a load bearing concrete panel which is less expensive and has better durability than existing concrete bridge deck panels due to the removal of flexural reinforcing material, such as conventional steel reinforcing bars, in the top half of the panel near the top surface of the panel, but without loss of the utility of such panels. In that regard, it is a further object of the invention to provide a load bearing concrete bridge deck panel structure which has sufficient flexural reinforcement (in its bottom half) to provide the appropriate amount of flexural strength, but which is also designed to eliminate or significantly impede both the amount and the speed of surface deterioration of the panel. More particularly, it is an object of the invention to provide a load bearing concrete bridge deck panel which resists cracking at the upper surface thereof due to concrete volume shrinkage and temperature changes, and which has structural properties that prevent or reduce deterioration of the top surface of the panel caused by corrosion of flexural reinforcing materials.

On page 17 of the specification, appellant indicates that the invention being taught

> is a load bearing concrete panel structure which uses structural plain concrete for at least the upper portion of the panel, which concrete has, in preferred embodiments, been specially formulated and installed in a manner to resist temperature change and concrete shrinkage cracking at the upper surface, and which relies on flexural reinforcing materials, such as standard flexural reinforcing bars, being confined to the lower half of the panel to carry superimposed loads.

Different practices envisioned by appellant for improving upper surface crack control are taught in the paragraph bridging pages 19-20 of the specification. On page 21, lines 18-21, it is noted that "[i]n preferred embodiments, a minimum of reinforcement material, such as fiber or fabric may be disposed in the panel, preferably in about the upper one-third to one-half portion of the concrete layer to provide control of cracking due to temperature change and concrete shrinkage."

Independent claims 57, 70, 72 and 74 are representative of the subject matter on appeal, and a copy of those claims is attached to this decision.

The prior art references of record relied upon by the examiner in rejecting the claims on appeal are:

Givens, Jr. (Givens)	3,808,085	Apr. 30, 1974
Lankard	3,986,885	Oct. 19, 1976
Kobayashi et al. (Kobayashi)	4,565,840	Jan. 21, 1986

Claims 65 and 66 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite since they each depend from canceled claim 64.

Claims 57 through 63, 65, 66 and 69 through 78 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Givens.

Claims 57 through 63, 65, 66 and 69 through 78 also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Givens.

Claims 57 through 63, 65, 66 and 69 through 78 additionally stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Givens in view of Lankard.

Claim 79 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Givens in view of Kobayashi.

Rather than reiterate the conflicting viewpoints advanced by appellant and the examiner regarding the above-noted rejections, we refer to the examiner's answer (Paper No. 55, mailed April 23, 2002) and appellant's brief (Paper No. 54, filed January 21, 2002) and reply brief (Paper No. 56, filed June 24, 2002) for a full exposition thereof.

OPINION

Having carefully reviewed the indefiniteness, anticipation and obviousness issues raised in this appeal in light of the record before us, we have made the determinations which follow.

Looking first to the examiner's rejection of claims 65 and 66 under 35 U.S.C. § 112, second paragraph, as being indefinite, we observe that these claims do in fact each depend from canceled claim 64. Therefore, we agree with the examiner's assessment of the indefiniteness of these claims and, accordingly, sustain this rejection. On page 21 of the brief, appellant has conceded this rejection and merely noted that it can readily be overcome since

the dependancy of the claims can be changed subsequent to this appeal. For purposes of this appeal, we have assumed that claims 65 and 66 would properly depend from claim 63.

Regarding the examiner's rejection of claims 57 through 63, 65, 66 and 69 through 78 under 35 U.S.C. § 102(b) as being anticipated by Givens, we note that independent claim 57 defines a load bearing concrete panel structure designed to be supported between at least a pair of separated support members, wherein the panel structure is produced from a shrinkage and temperature resistant concrete composition and the upper half of the panel structure which is designed to come into contact with loads

> consists essentially of plain concrete, said plain concrete being a structural concrete in which said plain concrete carries all the flexural tensile stresses and which said plain concrete is characterized as a structural concrete whose maximum flexural strength is attained at the cracking load thereof, said plain concrete having a tensile strength less than about 750 pounds per square inch.

Claim 57 also recites that the upper half of the concrete panel structure, intermediate the two furthest separated support members, is "free of flexural reinforcing means for carrying bending moment tension stresses in said panel structure" and that

the lower half of the panel structure spaced from the loads "includes flexural reinforcing means for carrying bending moment tension stresses."

The Givens patent relied upon by the examiner discloses a load bearing concrete panel structure (Figs. 1 and 2) designed to be supported between at least a pair of separated support members (24), wherein the concrete panel structure (20 of Fig. 2) includes an upper portion or layer (13) formed of a shrinkage and temperature resistant fibrous-concrete composition (14), with the remainder of the panel structure being formed of reinforced concrete, generally designated (17), consisting of concrete (15) containing a plurality of steel reinforcing bars (18). See col. 3, lines 53-63 of Givens. The fibrous concrete material (14) consists of concrete (15) and a multitude of short steel fibers (16) uniformly distributed randomly therein at an average spacing of less than 0.3 inch. Like appellant, an objective of the invention in Givens is elimination of conventional reinforcing bars or rods in the upper half of the panel structure (see col. 14, lines 43-66).

In the paragraph bridging columns 5 and 6 of the Givens patent, it is noted that the multitude of short-wire segments in the fibrous concrete in combination with the very close spacing of the wire segments restrain and hinder initiation and propagation of cracks in the concrete matrix in which the wire fibers are uniformly distributed randomly, but that the short-wire elements or fibers "do not impart significant tensile strength to the fibrous-concrete because of their own tensile strength" (col. 6, lines 9-12). In column 6, lines 12-18, it is indicated that the extremely close spacing of the wire elements in the fibrous concrete (i.e., an average spacing of less than 0.3 inch) is of essence to providing significantly improved crack resistance and that "[t]hrough restriction of the growth of cracks the useful tensile strength, both ultimate and first-crack, of fibrous concrete are increased significantly over that of unreinforced concrete." Givens further discloses in column 5, lines 45-47, that the short wire segments or fibers are included in the fibrous concrete "in an amount between 0.3 and 5.0 percent by volume."

According to the examiner, when the lower end of the range, i.e., 0.3 percent volume of wire segments, is included in the

upper layer of Givens bridge deck panel, the upper layer "is well within the range of 'plain concrete' as defined by applicant's original specification and recited in the claims" (answer, page 5). In reaching this conclusion, the examiner points to part of the definition of "plain concrete" provided by appellant on page 26 of the specification, i.e., that "plain concrete" is "any concrete that does not meet the criteria for reinforced concrete." The examiner also points to the following portions of appellant's specification for statements regarding what constitutes "plain concrete" and "reinforced concrete":

> '[i]n order to meet the minimum flexural reinforcing requirements, the minimum volume of steel flexural reinforcing in the upper half of the panel would generally be greater than about 1.0% by volume of the upper half of the panel.' (emphasis added) (page 29, lines 12-15)
>
> '[w]hen fibers are used without any other measures to control temperature and shrinkage cracking, this may be accomplish by using fibrous reinforcement material of from about 0.3% to about 4%, by volume, within the top one-half of deck panel 12.' (emphasis added)(page 32, lines 12-14)
>
> '[a] greater percentage of fibers is required to provide drying shrinkage crack control. For example, the percent volume of steel fiber reinforcement necessary for temperature and shrinkage crack control is usually in the range of 0.3% to 0.8% by volume and is most preferably less than 1%, but may be as much as 2% or greater.' (emphasis added)(page 32, lines 16-20)
>
> '[t]his provides a total volume of steel wire reinforcement in the upper half of less than about 0.5% which is

> substantially less than the minimum amount of reinforcing necessary in the upper half to meet the requirements for 'reinforced concrete'.' (emphasis added)(page 33, lines 18-21)

Based on the foregoing and other comments made on pages 5 through 7 of the answer, the examiner concludes that the concrete panel structure defined in appellant's claims on appeal does not distinguish from the concrete panel structure of Givens, when the upper layer in Givens bridge deck panel has a wire fiber content of 0.3 percent by volume.

On pages 7-8 of the answer, the examiner specifically addresses the requirement in claim 57 that the plain concrete have "a tensile strength less than about 750 pounds per square inch." It is apparent that the examiner's position regarding anticipation of claim 57 by Givens, and the other claims so rejected, relies on inherency, i.e, the examiner has apparently concluded that a load bearing concrete panel structure like that in Givens having 0.3% by volume wire fibers; with said wire fibers being 0.5 inches long and 0.006 inches in diameter; with an average wire spacing of 0.5 inch, would inherently provide a

tensile strength for the fibrous concrete of the upper layer well below 750 psi as claimed by appellant.

As a fall back position, the examiner has also rejected claims 57 through 63, 65, 66 and 69 through 78 under 35 U.S.C. § 103(a) as being unpatentable over Givens based on the conclusion that

> it would have been obvious to one having ordinary skill in the art to add short wire elements in the upper half of the panel of Given, Jr. in the amount such that the upper half has a tensile strength less than about 750 pounds per square inch as recited because Given, Jr. explicitly disclose that the short wire segments in the upper half layer do not impart significant tensile strength to the fibrous-concrete because of their won [sic] tensile strength (see column 6, lines 8-14), especially when considering that Givens, Jr. further discloses that concrete per se has a tensile strength of only '150 to 200 lbs/sq. in. in seven days and of 225 to 300 lbs/sq. in. in 30 days'.

An important aspect of this case is the determination of exactly what appellant means when he uses the term "plain concrete." As we noted earlier, a definition of this term is found on page 26 of the specification, and reads as follows:

> 'Plain concrete' is structural concrete in which the concrete is designed to carry all the flexural tensile stresses and any reinforcing material, when present, is assumed not to carry any flexural tensile stress. A 'plain concrete' structure is characterized as a structure whose

> maximum flexural strength is attained at the cracking load of the concrete. 'Plain concrete' is also any concrete that does not meet the criteria for reinforced concrete.

In addition, we have the similar language, for example, of claim 57 concerning what constitutes "plain concrete" and the further recitations in claims 63, 65 and 66 regarding the fact that "plain concrete" may also include either "fiber material means" or "metal rods or metal wire web fabric" in an amount and distribution sufficient to substantially resist crack formation due to temperature change and concrete volume shrinkage of the panel structure.

Further, on page 31 of the specification, appellant describes an embodiment of the invention (Fig. 4) wherein at least the concrete of the upper half (36) of the panel structure includes a fibrous reinforcement material (34) uniformly distributed throughout, and states that such fibrous concrete "shall be a plain concrete in that the strength of the concrete after cracking is less than the strength prior to cracking" (page 31, lines 18-19). Appellant goes on to note that "[w]hen fibers are used without any other measures to control temperature and shrinkage cracking, this may be accomplished by using fibrous

reinforcement material of from about 0.3% to about 4%, by volume, within the top one-half of deck panel 12" (page 32, lines 12-14). In addition, appellant indicates on page 36, lines 11-13) that "[f]iber reinforcing material or welded wire fabric, when used to assist in shrinkage and temperature change crack resistance, are in a quantity so as not to meet the requirements for 'flexural reinforcing'." "Flexural reinforcing" is defined on page 26 of the specification as being

> material which is utilized in reinforced concrete and is designed to carry all the tensile bending stress on the reinforced concrete member while the concrete is assumed not to carry any tensile stress. Flexural reinforcing is provided in an amount and orientation such that the flexural strength of the member is not diminished after the concrete sets and cracks.

On the basis of the foregoing information, we understand "plain concrete" as used in the present application and claims on appeal to, at least, be readable as a concrete material including cement, sand, water, coarse aggregate and a proportion of short pieces or fibers of wire so as to define a structural concrete with improved resistance to cracking at the upper surface thereof due to concrete volume shrinkage and temperature changes, and which has structural properties that prevent or reduce deterioration of the top surface of the panel caused by corrosion

of flexural reinforcing materials. In that regard, we also understand that such "plain concrete" will have a strength after cracking which is less than the strength of the concrete prior to cracking and wherein the short pieces or fibers of wire are present in a quantity so as not to meet the requirements for "flexural reinforcing," as that term is defined on page 26 of appellant's specification. The "cracking" referred to above is considered to be full cracking of the concrete panel structure wherein a crack extends entirely through the panel structure. It is our determination that the above understanding of the terminology "plain concrete" constitutes the broadest reasonable interpretation consistent with the specification. See, In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983); In re Tanaka, 551 F.2d 855, 860, 193 USPQ 138, 141 (CCPA 1977).

Looking to the disclosure of Givens, we understand the fibrous-concrete material therein to be "plain concrete" within the meaning we have ascribed to that term above. In that regard, we know from Givens and Romualdi[1] that the concrete of Givens

[1] "Romualdi" is U.S. Patent No. 3,429,094 issued Feb. 25, 1969 to J. P. Romualdi and incorporated by reference into the Givens patent disclosure at column 5, lines 7-58.

panel structure is a concrete material including cement, sand, water, coarse aggregate and a proportion of short pieces or fibers of wire (e.g., between 0.3% and 5% by volume at an average spacing of less than 0.3 inch) so as to define a structural concrete with improved resistance to cracking at the upper surface thereof due to concrete volume shrinkage and temperature changes (Givens, col. 6, lines 18-22 and Romualdi, col. 10, lines 19-25), and which will have a strength after cracking that is less than the strength of the concrete prior to cracking and wherein the short pieces or fibers of wire are present in a quantity so as not to meet the requirements for "flexural reinforcing," as that term is defined on page 26 of appellant's specification. In that regard, it is apparent from the disclosure in the paragraph bridging columns 5 and 6 of Givens that the multitude of short wire segments in the fibrous concrete do not themselves carry "all" the tensile bending stress of the concrete panel member. Again, the cracking referred to above is full cracking of the concrete panel structure wherein a crack extends entirely through the panel structure.

However, even though we agree with the examiner that the fibrous-concrete material of Givens is "plain concrete" within

the context of the claims on appeal, such does not end the inquiry with regard to claim 57, since we find no basis in Givens to support the examiner's speculation that the concrete material of Givens has a tensile strength "well below 750 psi" (answer, page 7), or the examiner's alternative conclusion that a tensile strength of less than about 750 psi would have been obvious based on the teachings of Givens. In the first place, the examiner's reliance on a wire spacing of 0.5 inch (answer, page 7), is misplaced, since Givens makes it clear on a number of occasions (e.g., col. 1, lines 20-25; col. 4, lines 7-10; and col. 16, lines 28-31) that a very close wire spacing of "less than 0.3 inch" is important to the invention therein.

Further, as noted by appellant (brief, page 13), Givens seeks to provide a load bearing concrete structural panel member which utilizes fibrous-concrete having an enhanced useful tensile strength, both ultimate and first-crack, that is increased significantly over that of unreinforced concrete, and the only value mentioned in Givens as providing an adequate safety factor for the fibrous-concrete therein is "1,000 psi in tension" (col. 8, line 53), with ultimate tensile strengths of 2,500 psi and higher and first-crack tensile strengths of 1,800 psi and higher

readily achievable. Similarly, Romualdi seeks to provide a load bearing concrete structural member which utilizes fibrous-concrete having an enhanced useful tensile strength on the order of "two to three times that of conventionally reinforced concrete" (col. 2, lines 1-2) and which has a tensile strength "at least about 1000 pounds per square inch" (col 14, lines 63-64). Thus, it is clear to us that one of ordinary skill in the art would find no teaching in Givens of a load bearing concrete panel structure like that defined in claim 57 on appeal, or any reason or suggestion therein to provide such a structure wherein the fibrous concrete has a tensile strength "less than about 750 pounds per square inch," since such is totally contrary to the clear teachings of Givens and also Romualdi, which is incorporated by reference therein.

Accordingly, we will not sustain the examiner's rejection of independent claim 57 under 35 U.S.C. § 102(b) or the rejection thereof under 35 U.S.C. § 103(a) based on Givens alone. It follows that the examiner's similar rejections of claims 58 through 63, 65, 66, 69 and 76 through 78, which claims depend from claim 57, will likewise not be sustained.

We have also reviewed the examiner's rejection of dependent claim 79 under 35 U.S.C. § 103(a) based on the combined teachings of Givens and Kobayashi (answer, page 9), but find nothing in the teachings of Kobayashi relied upon by the examiner which overcomes or provides that which we have found to be lacking in Givens. Thus, the examiner's rejection of dependent claim 79 under 35 U.S.C. § 103(a) based on the combined teachings of Givens and Kobayashi will also not be sustained.

With regard to independent claim 74, we note that this claim does not include a limitation concerning the concrete having "a tensile strength less than about 750 pounds per square inch" or the limitation regarding the upper half of the deck panel structure being "substantially free of flexural reinforcement means for carrying bending moment tension stresses," both of which limitations are found in claim 57. Thus, appellant's argument on page 15 of the brief that claim 74 defines the invention "using the same properties and limitations found in Claim 57," is without foundation and wholly inaccurate.

As for appellant's assertion that Givens does not anticipate "plain concrete" as that term should be understood from claim 74, we remain of the view expressed above that Givens discloses a "plain concrete" as broadly set forth in the claims before us on appeal, i.e., a structural concrete inclusive of a multitude of short steel fibers uniformly distributed randomly therein and wherein "said plain concrete" carries all the flexural tensile stresses and whose maximum flexural strength is attained at the full cracking load thereof. Moreover, as is made clear in Givens (e.g., col. 6, lines 18-21), the fibrous concrete therein is formulated to have an excellent wear resistance and enhanced resistance to surface cracking and spalling upon exposure to heat and weather. From Romualdi (col. 10, lines 19-25) it is also clear that the fibrous concrete is formulated to have concrete shrinkage volume change compensating properties. Contrary to appellant's arguments (brief, page 16, reply brief, pages 9-10), based on the disclosure in appellant's specification, we do not see that the "consisting of plain concrete" language of claim 74 requires a concrete formulation without any fibrous pieces to provide the properties noted in the claim. Again, we note that

we have given the language of the claims its broadest reasonable interpretation consistent with the specification, rather than its most limited interpretation as urged by appellant

On the basis of the foregoing, we will sustain the examiner's rejection of claim 74 under 35 U.S.C. § 102(b) and under 35 U.S.C. § 103 based on Givens. As has been made clear by our reviewing Courts on numerous occasions, anticipation or lack of novelty is the ultimate or epitome of obviousness. See, in this regard, In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982); In re Pearson, 494 F.2d 1399, 1402, 181 USPQ 641, 644 (CCPA 1974).

In accordance with appellant's grouping of the claims on page 9 of the brief, we also conclude that claim 75 will fall with claim 74, from which it depends.

The remaining claims subject to rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103 based on Givens alone are process claims 70 through 73, wherein claims 70 and 72 are independent claims. In arguing claims 70 and 72 (brief, pages 14-15)

appellant has again focused on the recitation of "plain concrete" as a distinguishing feature relative to Givens. We find this argument no more persuasive here than we did with regard to the other claims on appeal, and also point out that unlike the other claims on appeal claims 70 and 72 even more broadly recite the concrete used in the load bearing panel structure as being "substantially plain concrete" (emphasis added).

As for appellant's further argument that claim 70 distinguishes over Givens because it requires placing unset concrete to form the upper and lower halves of appellant's panel structure "at the same time" (brief, page 15 and reply brief, page 9) and thus in a single step, we must agree with the examiner (answer, page 15) that no such requirement is manifested in claim 70. Claim 70 is drafted in an open-ended "comprising" format and thus is not limited to only the steps set forth therein. Moreover, there is nothing in the "placing unset concrete" step of claim 70 which mandates a single pour or placement of concrete to form both the upper and lower halves of the panel structure "at the same time." Like the examiner, we are of the view that the disclosure at column 14, line 42 through column 15, line 3 of Givens is fully responsive to the process of

claim 70 and particularly appellant's argued "placing unset concrete" step, even though Givens may require two pours of unset concrete to form the upper and lower halves of his panel structure.

In light of the foregoing, the examiner's rejections of claims 70 and 72 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103 based on Givens alone are sustained. In accordance with appellant's grouping of the claims on page 9 of the brief, we also conclude that claim 71 will fall with claim 70, from which it depends, and that dependent claim 73 will fall with its parent claim 72.

The last of the examiner's rejections for our review is that of claims 57 through 63, 65, 66 and 69 through 78 under 35 U.S.C. § 103(a) as being unpatentable over Givens in view of Lankard. In this instance, the examiner points us to Lankard for evidence that, in the lower ranges set forth in Givens, the addition of fibers to the concrete does not increase the flexural strength of the concrete substantially such that it would be considered "reinforced concrete" within the definition provided by appellant in the paragraph bridging pages 26-27 of the present

specification. Be that as it may, we find nothing in Lankard which would change our view as expressed above with regard to claim 57 on appeal, and the claims which depend therefrom, particularly with respect to the requirement in claim 57 of a plain concrete having "a tensile strength less than about 750 pounds per square inch." The closest example we see in Lankard is Batch I in Table 2, wherein a fibrous concrete with 0.34 volume percent fibers having 0.010 inch diameter and 1.0 inch long were uniformly distributed randomly in a mortar beam and resulted in the beam having a flexural strength at both first-crack and ultimate of 940 psi.

Simply stated, given the disclosure of a desired 1,000 psi tension in Givens and 940 psi at 0.34 volume percent fibers in Lankard, we see no basis for the examiner to conclude that a fiber content of 0.3 percent by volume in Givens and with the size of fibers and spacing required in Givens would "inherently" result in a panel structure with a tensile strength of "less than about 750 pounds per square inch," as required by appellant's claim 57. In that regard, we note that it is well settled that inherency may not be established by probabilities or possibilities, but must instead be "the natural result flowing

from the operation as taught." See In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). The examiner's rejection of claims 57 through 63, 65, 66, 69 and 76 through 78 under 35 U.S.C. § 103(a) as being unpatentable over Givens in view of Lankard will not be sustained.

As for claims 70 through 75, we see nothing in Lankard which would change our view of Givens as already expressed above. Accordingly, we will sustain the examiner's rejection of claims 70 through 75 under 35 U.S.C. § 103(a) based on the collective teachings of Givens and Lankard, again noting that anticipation or lack of novelty is the ultimate or epitome of obviousness.

With regard to the Declaration Under Rule 132 filed by appellant on November 7, 1994, we note that such declaration addressing evidence of secondary considerations, such as discovery of the problem, unexpected results, skepticism of others in the art, etc., is irrelevant to the 35 U.S.C. § 102 rejection based on Givens and thus cannot overcome that rejection. See, In re Wiggins, 488 F.2d 538, 543, 179 USPQ 421, 425 (CCPA 1973). As for the rejections of the claims on appeal

under 35 U.S.C. § 103(a) based on Givens alone or Givens in view of Lankard, we note that we have sustained such rejections only on the basis that anticipation or lack of novelty is the ultimate or epitome of obviousness, and thus remain of the view that the declaration filed November 7, 1994 is entitled to no weight. Moreover, to the extent that some consideration of the declaration may be required, we are in agreement with the examiner's assessment of the declaration as set forth on pages 17 and 18 of the answer.

To summarize, we note that the rejection of claims 57 through 63, 65, 66 and 69 through 78 under 35 U.S.C. § 102(b) as being anticipated by Givens has been sustained as to claims 70 through 75, but not with regard to claims 57 through 63, 65, 66, 69 and 76 through 78. Similarly, the examiner's rejections of claims 57 through 63, 65, 66 and 69 through 78 under 35 U.S.C. § 103(a) based on Givens alone or Givens in view of Lankard have been sustained as to claims 70 through 75, but not with regard to claims 57 through 63, 65, 66, 69 and 76 through 78. In addition, the examiner's rejection of claim 79 under 35 U.S.C. § 103(a) based on the combined teachings of Givens and Kobayashi was not sustained. The examiner's rejection of claims 65 and 66 under

35 U.S.C. § 112, second paragraph, as being indefinite, has been sustained. Thus, the decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

CHARLES E. FRANKFORT Administrative Patent Judge	)	
WILLIAM F. PATE III Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
LAWRENCE J. STAAB Administrative Patent Judge	)	

CEF:pgg

Appeal No. 2002-2090
Application 08/430,311

David F. Zinger, Esq.
Sheridan Ross P.C.
1560 Broadway
Suite 1200
Denver, Co 80202

APPENDIX

57. A load bearing concrete panel structure which is designed to be supported between at least a pair of separated support members, said panel structure being comprised of a concrete structure having a length dimension, a width dimension, and a height dimension, said concrete structure having an upper half having an upper surface which is designed to come into contact with or to be closely adjacent to loads which traverse said panel structure, and a lower half having a lower surface which is spaced from loads which traverse said panel structure, and wherein the improvement comprises:

said panel structure being produced from a shrinkage and temperature resistant concrete composition;

and which said upper half of said panel structure consists essentially of plain concrete, said plain concrete being a structural concrete in which said plain concrete carries all the flexural tensile stresses and which said plain concrete is characterized as a structural concrete whose maximum flexural strength is attained at the cracking load thereof, said plain concrete having a tensile strength less than about 750 pounds per square inch,

and which said upper half, intermediate the two furthest separated support members, is free of flexural reinforcing means for carrying bending moment tension stresses in said panel structure,

and wherein said lower half of said panel structure includes flexural reinforcing means for carrying bending moment tension stresses.

70. A process for casting a load bearing concrete deck panel structure to be supported on structural elements spanning three or more structural element supports, comprising the steps of:

a. installing forming structure onto said structural elements to support the casting of said deck panel structure,

b. placing supports for flexural reinforcement means

for carrying bending moment tension stresses for said deck panel structure on said forming structure, for the purpose of holding said flexural reinforcement means for carrying bending moment tension stresses above said forming structure, but in what will be the lower half of said concrete deck panel structure;

c. installing said flexural reinforcement means for carrying bending moment tension stresses on said supports; and then

d. placing unset concrete over and around said flexural reinforcement means for carrying bending moment tension stresses, wherein the upper half of said deck panel structure, intermediate the furthest apart structural support elements, is substantially free of flexural reinforcement means for carrying bending moment tension stresses, whereby, when said concrete deck panel structure is set, said upper half intermediate the two furthest separated structural support elements is substantially plain concrete, wherein said plain concrete being a structural concrete in which said plain concrete carries all the flexural tensile stresses and which said plain concrete is characterized as a structural concrete whose maximum flexural strength is attained at the cracking load thereof.

72. A process for constructing a load bearing concrete deck panel structure using pre-cast panels supported on structural elements spanning between lower supports and a structurally bonded upper layer, and comprising the steps of:

a. installing pre-cast concrete deck panels containing flexural reinforcing means for carrying bending moment tension stresses; and then

b. casting a layer of concrete which is substantially free of flexural reinforcing means for carrying bending moment tension stresses over said pre-cast concrete deck panels, whereby, when said cast concrete layer is set, it is substantially plain concrete,

wherein said plain concrete being a structure concrete in which said plain concrete carries all the flexural tensile

stresses, and which said plain concrete is characterized as a structural concrete whose maximum flexural strength is attained at the cracking load thereof.

74. A load bearing concrete panel structure for use as decking material in a bridge structure, said panel structure being comprised of at least an upper layer of concrete and a lower layer of concrete, each said layer of concrete having a length dimension, a width dimension, and a height dimension of at least three inches, said upper layer of concrete having an upper surface which will come into contact with or be closely adjacent to loads which traverse the panel structure wherein the improvement comprises:

said upper layer consisting of plain concrete, said plain concrete being a structural concrete in which said plain concrete carriers all the flexural tensile stresses and which said plain concrete is characterized as a structural concrete whose maximum flexural strength is attained at the cracking load thereof, and said plain concrete having a concrete formulation with concrete shrinkage volume change compensating properties and adequate tensile strength to resist stresses from temperature change and concrete shrinkage change and

said lower layer includes structural flexural reinforcement means for bending moment tensions stresses.